

Absolute Value problems: answers

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|---|--|--|---|
| 1. $x = 14$ or $x = -24$ | 16. $x = -\frac{17}{4}$ | 31. $-23 < x < 14$ | 46. $x \leq -4$ or $x \geq -2$ |
| 2. $x = 12$ or $x = -2$ | 17. $x = 12$ or $x = 2$ | 32. $x < -2$ or $x > 12$ | 47. $2 < x < 12$ |
| 3. $x = 10$ or $x = 8$ | 18. $x = 48$ or $x = \frac{24}{5}$ | 33. $8 \leq x \leq 10$ | 48. $x < -24$ or $x > 0$ |
| 4. $x = \frac{5}{2}$ | 19. $x = \frac{1}{2}$ or $x = 2$ | 34. all $x \in \mathbb{R}$ | 49. $\frac{1}{2} \leq x \leq 2$ |
| 5. $x = \frac{13}{2}$ or $x = -\frac{7}{2}$ | 20. $x = -\frac{1}{2}$ or $x = -2$ | 35. $-\frac{7}{2} < x < \frac{13}{2}$ | 50. $x \leq -\frac{17}{7}$ or $x \geq 1$ |
| 6. $x = \frac{4}{5}$ or $x = \frac{8}{5}$ | 21. $x = 21$ or $x = -\frac{1}{3}$ | 36. $x < \frac{4}{5}$ or $x > \frac{8}{5}$ | 51. $1 < x < 3$ |
| 7. $x = 5$ or $x = -15$ | 22. $x = -6$ or $x = 0$ | 37. $-15 \leq x \leq 5$ | 52. $x < -24$ or $x > 3$ |
| 8. $x = 11$ or $x = 5$ | 23. $x = -2$ or $x = \frac{12}{5}$ | 38. $x \leq 5$ or $x \geq 11$ | 53. $x \leq -2$ or $x \geq \frac{12}{5}$ |
| 9. $x = \frac{7}{2}$ or $x = \frac{1}{2}$ | 24. $x = 2$ or $x = -\frac{12}{5}$ | 39. $\frac{1}{2} < x < \frac{7}{2}$ | 54. $-\frac{12}{5} \leq x \leq 2$ |
| 10. no solution | 25. $x = -10$ or $x = \frac{4}{5}$ | 40. all $x \in \mathbb{R}$ | 55. $x < -\frac{21}{10}$ or $x > -\frac{3}{14}$ |
| 11. $x = 6$ | 26. $x = 0$ or $x = 24$ | 41. $x \geq 6$ | 56. all $x \in \mathbb{R}$ |
| 12. $x = -6$ | 27. $x = -14$ or $x = 10$ | 42. $x \geq -6$ | 57. $x < -14$ or $x > 10$ |
| 13. $x = 3$ | 28. $x = -\frac{5}{2}$ or $x = -\frac{5}{4}$ | 43. $x > 3$ | 58. $x < -\frac{19}{5}$ or $x > -1$ |
| 14. $x = 0$ | 29. no solution | 44. $x > 0$ | 59. no solution |
| 15. $x = 2$ or $x = 4$ | 30. $x = 21$ or $x = \frac{3}{5}$ | 45. $2 \leq x \leq 4$ | 60. $\frac{3}{5} \leq x \leq 21$ |
61. (a) $|x - 80|$ (or $|80 - x|$)
 (b) $|x - 130|$ (or $|130 - x|$)
 (c) $|x - 130| < \frac{1}{2}|x - 80|$
 (d) (iv) $x = 120$ and (v) $x = 150$ only
 (e) $113\frac{1}{3} < x < 180$.
 (f) The new station can be built between $113\frac{1}{3}$ and 180 km from the terminus.
62. (a) $1 < t < \frac{5}{3}$
 (b) The inequality has only negative solutions ... truck C is always more than 5km from truck B.
 (c) $t < 6$